

## **REMARKS / ARGUMENTS**

### **I. General Remarks and Disposition of the Claims**

Please consider the application in view of the following remarks. Applicants thank the Examiner for careful consideration of this application including the references that Applicants have submitted in this case.

At the time of the Final Office Action, claims 42-61 were pending in this application. Claims 42-61 were rejected in the Final Office Action. Claims 42 and 49 have been amended herein to correct *Markush* group language. Applicants submit that these amendments are minor and request that they be entered in the case. Applicants respectfully request reconsideration in light of the amendments and remarks contained herein.

### **II. Remarks Regarding Rejections Under 35 U.S.C. § 103(a)**

#### **A. Claims 42-48 and 55-60 over *Nguyen* in view of *Lee* and *Still***

Claims 42-48 and 55-60 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,209,643 to Nguyen et al. (hereinafter "*Nguyen*") in view of U.S. Patent No. 6,817,414 to Lee et al. (hereinafter "*Lee*") and U.S. Patent No. 7,166,560 to Still et al. (hereinafter "*Still*"). Applicants respectfully disagree. In order for a reference or combination of references to form the basis for a rejection under § 103(a), a *prima facie* case of obviousness must be established. Obviousness is determined by construing the scope of the prior art, identifying the differences between the claims and the prior art, determining the level of skill in the pertinent art at the time of the invention, and considering objective evidence present in the application indicating obviousness or nonobviousness. *Graham v. John Deere*, 383 U.S. 1, 17 (1966). The United States Supreme court has identified a number of rationales under which a *prima facie* case of obviousness may be established. See *KSR International Co. v. Teleflex, Inc.*, 550 U.S. 398, 127 S.Ct. 1727, 1731 (2007). Each rationale is directed towards identifying known elements in the prior art. See MPEP § 2143. Applicants respectfully submit that due to the differences between the claims as currently amended and the cited references, the Examiner has not established a *prima facie* case of obviousness, in that the combination of *Nguyen*, *Lee*, and *Still* does not establish that each limitation of the present claims was known in the prior art.

i. The References Do Not Disclose “Combining an Acid-Releasing Degradable Material With a Solvent or a Plasticizer to Create a Coating Solution”

*Nguyen, Lee, and Still* do not disclose “combining an acid-releasing degradable material with a solvent or a plasticizer to create a coating solution” as required by independent claim 42, or “combining an acid-releasing degradable material with a plasticizer to create a coating solution” as required by independent claim 55. With respect to *Nguyen*, the Examiner does not dispute this fact but rather indicates that *Nguyen* discloses that a liquid or solution of a tackifying compound can contain a solvent. See Final Office Action at 3. The Examiner separately argues that the treatment chemical in *Nguyen* is the equivalent of the acid-releasing degradable material of the present application. *Nguyen* would therefore need to disclose that the treatment chemical, not the liquid or solution of a tackifying compound, is combined with a solvent and/or plasticizer to disclose the limitation in independent claims 42 and 55.

In rebuttal in the Final Office Action, the Examiner argues that the liquid or solution of tackifying compound can contain a solvent, and that the treatment chemical can be introduced in a similar manner. Final Office Action at 3. Thus, the treatment chemical may be introduced in a solution with a suitable solvent. *Id.* Applicants respectfully disagree. *Nguyen* discloses two distinct particulates: 1) a particulate material such as a proppant and 2) a “treatment chemical which may be in particulate form or coated upon or in a substrate.” *Nguyen* at col. 3, ll. 43-45. Specifically, the second type of particulate comprises a “porous or non-porous substrate upon which a treatment chemical is either absorbed or coated or even particulates or agglomerates of particles of a desired solid treatment chemical which exhibits solubility in the formation fluids upon contact therewith.” *Nguyen* at col. 4, ll. 32-36. Thus, the treatment chemical is a distinct component that is in a particulate form. The treatment chemical in the particulate form can be mixed with the first type of particulates and coated with a tackifying agent. *Id.* at col. 4, ll. 56-67. It is the coating with the tackifying compounds that “changes the interfacial surface tension effects of the fluids in contact with the treatment chemicals to reduce wetting of the treatment chemicals by the formation fluids thereby reducing the dissolution rate of the chemicals.” *Id.* at col. 4, ll. 52-56. The particulate form of the treatment chemical is the first indication that the treatment

chemical cannot form a “solution” and does not require a solvent to be combined with the fluids of *Nguyen*.

With respect to creating a coating solution, the portion of *Nguyen* referenced by the Examiner specifically states, “[t]he liquid or solution of tackifying compound and the hardenable resin generally are incorporated with the particulate as a simultaneous mixture by introduction into the fracturing or gravel packing fluid along with the particulate. The treatment chemical may be introduced in a similar manner and may be at least partially coated by the tackifying compound or may adhere to the particulate which has been at least partially coated with the tackifying compound.” *Nguyen* at col. 8, ll. 8-15. Applicants note that the “manner” of introducing the tackifying compound and hardenable resin refers to the inclusion of the tackifying compound and hardenable resin with the particulates in the fluid. This passage does not mention the use of a solvent with the tackifying compound or hardenable resin. Thus, the introduction of the treatment chemical in a similar “manner” would refer to the inclusion of the second type of particulates along with the tackifying compound and hardenable resin in the fluid and would not refer to the use of a solvent to introduce the treatment chemical. As the treatment chemical is in a particulate form, it would be introduced in the same manner as the first type of particulates and not the tackifying compound and hardenable resin. Thus, it is evident that *Nguyen* does not disclose that the treatment chemical is ever combined with a solvent and therefore does not disclose this limitation.

*Lee* does not account for the shortcomings of *Nguyen*. *Lee* specifically discloses that the acid coated sand can be prepared by heating a glycolic acid monomer to initiate polymerization and melt the resulting polymer while mixing with the sand. *Lee* at col. 3, ll. 57-63. Alternatively, spray drying may be used, which would simply entail spraying the sand with a melted glycolic acid polymer. *Lee* at col. 4, ll. 4-6. *Lee* does not mention the use of a solvent in coating the sand, and therefore does not disclose “combining an acid-releasing degradable material with a solvent or a plasticizer to create a coating solution” as required by independent claims 42, or “combining an acid-releasing degradable material with a plasticizer to create a coating solution” as required by independent claim 55.

*Still* suffers from the same deficiencies as *Nguyen* and *Lee*. *Still* is directed towards a solid acid precursor in a particulate form. See *Still* Abstract. *Still* does not involve the coating of any particulate, and therefore does not disclose “combining an acid-releasing degradable material with a solvent or a plasticizer to create a coating solution” as required by independent claim 42, or “combining an acid-releasing degradable material with a plasticizer to create a coating solution” as required by independent claim 55.

Since *Nguyen*, *Lee*, and *Still* do not disclose “combining an acid-releasing degradable material with a solvent or a plasticizer to create a coating solution” as required by independent claim 42, or “combining an acid-releasing degradable material with a plasticizer to create a coating solution” as required by independent claim 55, *Nguyen*, *Lee*, and *Still* cannot form a *prima facie* case of obviousness with respect to claims 42 or 55. For at least this reason, Applicants submit that claims 42-48 and 55-60 are not obviated by the combination of *Nguyen*, *Lee*, and *Still*. Accordingly, Applicants respectfully request withdrawal of this rejection with respect to claims 42-48 and 55-60.

ii. The References Do Not Disclose “Wherein the Acid-Releasing Degradable Material Comprises a Material that is Substantially Water Insoluble”

*Nguyen*, *Lee*, and *Still* do not disclose “wherein the acid-releasing degradable material comprises a material that is substantially water insoluble” as required by independent claims 42 and 55. With respect to *Nguyen*, the reference specifically requires that the treatment chemical to be “a desired solid treatment chemical *which exhibits solubility* in the formation fluids upon contact therewith.” *Nguyen*, col. 4, ll. 34-36 (emphasis added). Further, the treatment chemical may comprise “substantially any other chemical which *is soluble* in the fluids in the formation at the temperature conditions within the formation within which it is placed.” *Id.* at col. 4, ll. 44-46 (emphasis added). In addition, the Examiner recognizes that the treatment chemical is soluble by stating that the treatment chemical “*is dissolved* by the fluids present in the formation to provide the desired treatment.” Office Action at 5 (emphasis added). In contrast to the statements in *Nguyen* and the Office Action, the Examiner refers to the treatment chemical in *Nguyen* as the “water-insoluble treatment chemical” throughout the Final Office Action. Applicants note that the treatment chemical is referred to as a

“soluble” chemical in *Nguyen*, as described above. Therefore, the arguments made in support of the alleged *prima facie* case of obviousness in the final office action fail for at least the reason that there is no “water-insoluble treatment chemical” disclosed in *Nguyen*. Therefore, *Nguyen* does not disclose this limitation as required by claims 42 and 55.

*Lee* does not account for the shortcomings of *Nguyen*. *Lee* indicates that the “polymeric form of alpha-hydroxy acids, once formed and *re-dispersed in water*, can slowly hydrolyze and release an acidic by-product.” *Lee* col. 3, ll. 20-22. Thus, *Lee* indicates that the polymerized alpha-hydroxycarboxylic acid is water soluble or water dispersible and cannot therefore meet the limitation “wherein the acid-releasing degradable material comprises a material that is substantially water insoluble” as required by amended independent claims 42 and 55.

*Still* suffers from the same deficiencies as *Nguyen* and *Lee*. *Still* indicates that the solid-acid precursors are water soluble. For example, *Still* indicates that “it is believed that an intact surface of the solid acid-precursor is comparatively insoluble, but that when the surface is disrupted by the removal of a small amount of material subsequent dissolution of additional material from that surface is easier.” *Still* at col. 4, ll. 21-25. Thus, *Still* does not disclose the limitation “wherein the acid-releasing degradable material comprises a material that is substantially water insoluble” as required by amended independent claims 42 and 55.

For at least this reason, Applicants submit that claims 42-48 and 55-60 are not obviated by the combination of *Nguyen*, *Lee*, and *Still*. Accordingly, Applicants respectfully request withdrawal of this rejection with respect to claims 42-48 and 55-60.

iii. Additional Rejections of Claims 48 and 55

With respect to dependent claim 48, the Examiner alleges that the limitation is optional. Applicants respectfully disagree. Specifically, the limitation is not optional because claim 48 requires the acid-releasing degradable material to comprise a poly(orthoester). While the acid-releasing degradable material must comprise at least one of the materials listed in the Markush group of claim 42, the additional limitations introduced in claim 48 requires that the acid-releasing degradable material comprise a specific material—namely a poly(orthoester)—even if other materials are present.

Thus, Applicants request that the limitation be given the proper patentable weight during prosecution.

With respect to claim 55, the Examiner states that the disclosure of either solid acid-precursors that are liquid at wellbore temperatures or “soluble liquid additives” in *Still* teach the limitation of a plasticizer in claim 55. Applicants submit that nothing in *Still* teaches that these compositions would act as plasticizers. For the solid acid-precursors, the ability to plasticize the acid-releasing degradable material, if possible, would only function above the melting point of the cited materials, which the Examiner states would occur at wellbore temperatures. Applicants note that not all wellbores are above the stated melting temperatures. Further, the particulates can be coated prior to being placed in the subterranean formation and may not be above the temperatures indicated in the Office Action at the time the coating takes place. For the soluble liquid additives, there is nothing to indicate that any of these components would act as plasticizers. The fact that some of these compounds “may” act as plasticizers in some situations—an assertion the Applicants dispute—is not sufficient to establish the inherency of that characteristic.” See MPEP §2112. The MPEP instead requires “a basis in fact and/or technical reasoning . . . that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art.” *Id.* To the extent that the Examiner is relying on information within the Examiner's personal knowledge, Applicants again request that the Examiner cite a reference as documentary evidence in support of the position that the listed compounds would make polymers in a fracturing fluid more flowable or provide an affidavit to the same effect in accordance with MPEP § 2144.03 and 37 C.F.R. 1.104(d)(2).

Applicants note that the Examiner has specifically listed claims 52, 53, and 54 in the rejection but has not indicated that these claims are rejected over the combination of *Nguyen, Lee, and Still*. See Final Office Action at 2 (stating that “Claims 42-48 and 55-60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nguyen et al (US 6,209,643) in view of Lee et al (US 6,817,414) and Still et al (US 7166560)” and thus excluding claims 49-54 from the rejection). Applicants respectfully request that these claims either be indicated as being rejected over these references or that the reference

to any of claims 49-54 be removed from the rejection over *Nguyen* in view of *Lee* and *Still*.

Therefore, Applicants submit that claims 42-48 and 55-60 are not obviated by the combination of *Nguyen*, *Lee*, and *Still*. Accordingly, Applicants respectfully request withdrawal of this rejection with respect to claims 42-48 and 55-60.

**B. Claims 42-48 and 55-60 over *Nguyen* in view of *Lee* and *Still*, and further in view of *Murphey***

Claims 42-48 and 55-60 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Nguyen* in view of *Lee* and *Still*, and further in view of U.S. Patent No. 4,829,100 to *Murphey et al.* (hereinafter "*Murphey*").

In order for a reference or combination of references to form the basis for a rejection under § 103(a), the reference or combination of references must establish that every limitation of the claim was known in the prior art. As discussed above in Section II.A., the combination of *Nguyen*, *Lee*, and *Still* fails to establish that every limitation of independent claims 42 and 55 was known in the prior art. *Murphey* fails to render obvious the deficiencies of *Nguyen*, *Lee*, and *Still*. Rather, the Examiner merely relied on *Murphey* for its alleged teaching that "particulate material utilized in the performance of packing procedures or as a proppant material in fracturing treatments can be coated rapidly and continuously by admixing in a stream (on-the-fly) . . . instead of batch mixing which requires a period of time . . . ." Office Action at 9-10. Claims 43-48 and 56-60 depend, either directly or indirectly, from claims 42 and 55 and therefore include all the limitations of those independent claims, respectively. Thus, claims 42-48 and 55-60 are patentable over the combination of *Nguyen*, *Lee*, *Still*, and *Murphey*. See 35 U.S.C. § 112 4 (2004). Accordingly, for at least these reasons, Applicants respectfully request withdrawal of this rejection with respect to claims 42-48 and 55-60.

**C. Claims 42-48 and 55-59 over *Nguyen* in view of *Lee* and *Still*, and further in view of *McDougall***

Claims 42-48 and 55-59 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Nguyen* in view of *Lee* and *Still*, and further in view of U.S. Patent No. 5,192,615 to *McDougall et al.* (hereinafter "*McDougall*").

In order for a reference or combination of references to form the basis for a rejection under § 103(a), the reference or combination of references must establish that every limitation of the claim was known in the prior art. As discussed above in Section II.A., the combination of *Nguyen, Lee, and Still* fails to establish that every limitation of independent claims 42 and 55 was known in the prior art. *McDougall* fails to render obvious the deficiencies of *Nguyen, Lee, and Still*. Rather, the Examiner merely relied on *McDougall* for its alleged teaching that “generally a fracturing fluid comprises a viscous or gelled polymeric solution, a propping agent, a chemical breaker and other additives commonly used in fracturing fluid . . . , friction-reducing agents such as small amounts of high molecular weight linear polymers such as polyacrylamide . . . .” Office Action at 10. Applicants note that the Examiner appears to be indicating that simply combining any of the components of *McDougal* with a fluid used in a fracturing operation would meet the limitations of the claims. However, the claims are specific as to what components are combined and cannot therefore be taught by simple additives in a fluid, where they may or may not combine with any of the other components. Claims 43-48 and 56-60 depend, either directly or indirectly, from claims 42 and 55 and therefore include all the limitations of those independent claims, respectively. Thus, claims 42-48 and 55-60 are patentable over the combination of *Nguyen, Lee, Still, and McDougall*. See 35 U.S.C. § 112 4 (2004). Accordingly, for at least these reasons, Applicants respectfully request withdrawal of this rejection with respect to claims 42-48 and 55-60.

**D. Claims 42-61 over *Nguyen* in view of *Lee* and, and further in view of *Mikos***

Claims 42-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Nguyen* in view of *Lee* and *Still*, and further in view of PCT Publication No. WO 9425079A1 to Mikos *et al.* (hereinafter “*Mikos*”). For convenience, instead of WO 9425079A1, the Examiner refers to US 6,689,608 of the same patent family.

In order for a reference or combination of references to form the basis for a rejection under § 103(a), the reference or combination of references must establish that every limitation of the claim was known in the prior art. As discussed above in Section II.A., the combination of *Nguyen, Lee, and Still* fails to establish that every limitation of



independent claims 42, 49, and 55 was known in the prior art. *Mikos* fails to render obvious the deficiencies of *Nguyen*, *Lee*, and *Still*. Rather, the Examiner merely relied on *Mikos* for its alleged teaching that "a synthetic polymer which degrades in a controlled manner by hydrolysis include polyglycolic acid, polylactic acid, polyorthoester, polyanhydride, or copolymers thereof." Office Action at 11. Applicants note that *Mikos* is directed towards medical applications. See *Mikos* Abstract. It is not surprising that *Mikos* does not disclose at least "combining an acid-releasing degradable material with a solvent or a plasticizer to create a coating solution" as required by independent claims 42 or 49, or "combining an acid-releasing degradable material with a plasticizer to create a coating solution" as required by independent claim 55.

Claims 43-48, 50-54, and 56-61 depend, either directly or indirectly, from claims 42, 49, and 55 and therefore include all the limitations of those independent claims, respectively. Thus, claims 42-61 are patentable over the combination of *Nguyen*, *Lee*, *Still*, and *Mikos*. See 35 U.S.C. § 112 4 (2004). Accordingly, for at least these reasons, Applicants respectfully request withdrawal of this rejection with respect to claims 42-61.

### **III. Request for Evidentiary Support**

Once again, should any of the above asserted rejections be maintained, Applicants respectfully request appropriate evidentiary support. Additionally, if the Examiner is relying upon "common knowledge" or "well known" principles to establish the rejection, Applicants request that a reference be provided in support of this position pursuant to MPEP § 2144.03. Furthermore, to the extent that the Examiner maintains any rejection based on an "Official Notice" or other information within the Examiner's personal knowledge, Applicants respectfully request that the Examiner cite a reference as documentary evidence in support of this position or provide an affidavit in accordance with MPEP § 2144.03 and 37 C.F.R. 1.104(d)(2).

### **IV. No Waiver**

All of Applicants' arguments and amendments are without prejudice or disclaimer. Additionally, Applicants have merely discussed example distinctions from the cited references. Other distinctions may exist, and Applicants reserve the right to discuss these additional distinctions in a later Response or on Appeal, if appropriate. By not responding to additional statements made by the Examiner, Applicants do not

acquiesce to the Examiner's additional statements, such as, for example, any statements relating to what would be obvious to a person of ordinary skill in the art.

**SUMMARY**

In light of the above amendments and remarks, Applicants respectfully request reconsideration and withdrawal of the outstanding rejections. Applicants further submit that the application is now in condition for allowance, and earnestly solicit timely notice of the same. Should the Examiner have any questions, comments or suggestions in furtherance of the prosecution of this application, the Examiner is invited to contact the attorney of record by telephone, facsimile, or electronic mail.

Applicants believe that no fees are due in association with the filing of this response. Should the Commissioner deem that any fees are due, including any fees for extensions of time, Applicants respectfully request that the Commissioner accept this as a Petition Therefore, and direct that any additional fees be charged to McDermott Will & Emery's Deposit Account No. 500417, Order Number 086108-0180.

Respectfully submitted,

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